# Human-AI Co-Creation in Songwriting

## Abstract

Machine learning is challenging the way we make music. Although research in deep generative models has dramatically improved the capability and fluency of music models, recent work has shown that it can be challenging for humans to partner with this new class of algorithms. In this paper, we present findings on what 13 musician/developer teams, a total of 61 users, needed when co-creating a song with AI, the challenges they faced, and how they leveraged and repurposed existing characteristics of AI to overcome some of these challenges. Many teams adopted modular approaches, such as independently running multiple smaller models that align with the musical building blocks of a song, before re-combining their results. As ML models are not easily steerable, teams also generated massive numbers of samples and curated them post-hoc, or used a range of strategies to direct the generation, or algorithmically ranked the samples. Ultimately, teams not only had to manage the "flare and focus" aspects of the creative process, but also juggle them with a parallel process of exploring and curating multiple ML models and outputs. These findings reflect a need to design machine learning-powered music interfaces that are more decomposable, steerable, interpretable, and adaptive, which in return will enable artists to more effectively explore how AI can extend their personal expression.